

WHAT IS CLAIMED IS:

1. A method for coupling plastic optical fibers,
comprising:

providing a holder, which includes a groove for
5 holding plastic optical fibers in a longitudinal
direction; and

abutting and coupling opposed end faces of the
plastic optical fibers together while causing the holder
to apply a lateral pressure to the plastic optical fibers
10 therein to sandwich the plastic optical fibers.

2. The method according to Claim 1, wherein the
groove can encompass a cylindrical space occupying 50% or
more of an entire outer circumference of each of the
plastic optical fibers.

15 3. The method according to Claim 1, wherein at least one
portion of plastic optical fibers is made of fluoro-resin.

4. The method according to Claim 1, wherein the opposed
end faces of the plastic optical fibers are abutted and
coupled together with a refractive index matching agent
20 interposed therebetween.

5. The method according to Claim 1, wherein the groove
of the holder has openings at opposite ends of the holder,
the openings have inclined portions, and the opposed end
faces of the respective plastic optical fibers are
25 abutted and coupled together by introducing opposed ends
of the plastic optical fibers from the openings into the

groove in the holder through the inclined portions by use of flexibility of the holder with the lateral pressure preliminarily applied thereto.

6. The method according to Claim 5, wherein the groove
5 can encompass a cylindrical space occupying 50% or more of an entire outer circumference of each of the plastic optical fibers.

7. The method according to Claim 5, wherein at least one portion of plastic optical fibers is made of fluoro-resin.

10 8. The method according to Claim 5, wherein the opposed end faces of the plastic optical fibers are abutted and coupled together with a refractive index matching agent interposed therebetween.

9. A plastic optical fiber unit including a coupled
15 portion, the coupled portion formed by providing a holder, which includes a groove for holding plastic optical fibers in a longitudinal direction; and abutting opposed end faces of the plastic optical fibers while causing the holder to apply a lateral pressure to the plastic optical
20 fibers therein to sandwich the plastic optical fibers.

10. The plastic optical fiber unit according to Claim 9, wherein the groove can encompass a cylindrical space occupying 50% or more of an entire outer circumference of each of the plastic optical fibers.

25 11. The plastic optical fiber unit according to Claim 9, wherein at least one portion of the plastic optical

fibers is made of fluororesin.

12. The plastic optical fiber unit according to Claim 9,
wherein the opposed end faces of the plastic optical
fibers are abutted and coupled together with a refractive
5 index matching agent interposed therebetween.

13. The plastic optical fiber unit according to Claim 9,
wherein the groove of the holder has openings at opposite
ends of the holder, the openings have inclined portions,
and the opposed end faces of the respective plastic
10 optical fibers are abutted and coupled together to
provide the coupled portion by introducing opposed ends
of the plastic optical fibers from the openings into the
groove in the holder through the inclined portions by use
of flexibility of the holder with the lateral pressure
15 preliminarily applied thereto.

14. The plastic optical fiber unit according to Claim 13,
wherein the groove can encompass a cylindrical space
occupying 50% or more of an entire outer circumference of
each of the plastic optical fibers.

15. The plastic optical fiber unit according to Claim 13,
wherein at least one portion of the plastic optical
fibers is made of fluororesin.

16. The plastic optical fiber unit according to Claim 13,
wherein the opposed end faces of the plastic optical
25 fibers are abutted and coupled together with a refractive
index matching agent interposed therebetween.